REMARKS/ARUGMENTS

Upon entry of this amendment, claims 1, 3 and 5 will be amended, claims 9 and 19 will be canceled, and claims 24 and 25 will be added, whereby claims 1-8, 10-18 and 20-25 will be pending. Claim 1 is the sole independent claim.

By the amendment herein, claim 1 has been amended herein to include that the selected site in the digestive tract is in the intestines. Moreover, claim 1 has been amended to substantially include the recitation of dependent claim 9 therein, whereby dependent claims 9 as well as claim 19 which depends therefrom have been canceled. Support for the amendments to claim 1 appear throughout Applicant's originally filed disclosure, including the specification, at page 3, first and second full paragraphs; page 5, lines 13-14; page 8, first full paragraph; page 13, beginning at line 10; and the Examples. Still further, the claims have been cosmetically amended, and no estoppel should be deemed to be associated with these cosmetic amendments.

Claims 24 and 25 have been added to further define Applicant's invention similarly to originally presented claim 13.

Reconsideration and allowance of the application are respectfully requested.

Discussion Of Interviews And Office Actions

Applicant expresses appreciation for the courtesies extended by the Patent and Trademark Office during personal interviews with Examiners Kishore and Joynes on November 19, 2003 and Examiner Joynes on May 11, 2004.

During the November 19, 2003 interview, the impropriety of the Restriction Requirement was argued, because an action on the merits had already issued and in view of the

combination/subcombination relationship of the restricted claims. Moreover, during the interview, the disclosures of the prior art utilized in the rejection of record were discussed, and arguments were stressed that the combination of the documents utilized in the rejection does not teach the combination recited in Applicant's claims especially when there is no motivation to combine the documents in the manner asserted in the rejection to place the tape of Takayanagi in the capsule formation of Caldwell.

Following the interview and telephone discussions with Supervisory Patent Examiner Page regarding the impropriety of the Restriction Requirement, a communication was mailed December 2, 2003 from the Patent and Trademark Office indicating that the Restriction Requirement will be withdrawn, and a subsequent action for all pending clams would be mailed. Accordingly, no response was required to the incomplete Office Action mailed September 10, 2003, and Applicant filed, on December 10, 2003, a Letter Regarding Communication Mailed December 2, 2003.

The subsequent Office Action dated January 27, 2004 was initially received on January 28, 2004 and was received again on February 23, 2004. The only apparent differences between the two Office actions being that the Cover Page of the Office Action received on February 23, 2004 is marked as a Non-Final Office Action, and the Notices of References Cited (PTO-892) box is not checked.

During the May 11, 2004 interview, the subsequent Office Action was discussed. In particular, Applicant presented arguments regarding patentability of independent claim 1 and the claims dependents therefrom. Moreover, possible amendment of claim 1 to include that the selected site in the digestive tract is in the intestines was discussed with the Examiner. Still further, arguments were particularly stressed with respect to a number of the dependent claims including

dependent claims 4 and 5 directed to a hemispherical embodiment, claim 9 directed to the site-controlling layer being a film made an enteric polymer, claim 8 directed to the water-insoluble polymer or wax, and claims 22 and 23 directed to attachment to the protective layer and sealing of the drug-carrying layer.

Arguments as presented during the above-noted interview are included in the remarks presented herein.

Response To Formal Matters

Applicant once again expresses appreciation for the acknowledgment of the claim of priority under 35 U.S.C. 119 as well as receipt of all of the certified copies in this national stage application.

Applicant also expresses appreciation for the inclusion in the Office Action mailed September 10, 2003 of the initialed copy of the Form PTO-1449 submitted with the Supplemental Information Disclosure Statement filed February 20, 2003, whereby the Examiner's consideration of the Supplemental Information Disclosure Statement is of record.

Restriction Requirement

Applicants express appreciation for withdrawal of the Restriction Requirement whereby an action on the merits has been issued on all of the pending claims.

Rejections Based Upon Prior Art

The claims are rejected upon the same prior art as previously utilized in the rejections in the first and second Office Actions. In particular, the following rejections are present in the Office Actions:

(a) Claims 1-9, 22 and 23 are rejected under 35 U.S.C. 103(a) as being unpatentable over Takayanagi et al., U.S. Patent No. 4,765,983. This ground of rejection asserts that Takayanagi teaches an adhesive medical tape containing an active agent in an adhesive layer and a support layer, that the drug is contained in a water-soluble polymer, and that the medicant layer can be composed of one or more layers. The rejection contends that the various claimed embodiments are obvious, and the rejection does not see the criticality in the particular form of the adhesive layer or the particular dimensions of the form.

(b) Claims 10 and 11 are rejected 35 U.S.C. 103(a) as being unpatentable over Takayanagi et al., U.S. Patent No. 4,765,983, in combination with Uyama et al., U.S. Patent No. 6,086,869. This ground of rejection asserts that it would have been obvious to place an active agent, such as interferon, in a film composition that is administered in matrix or capsule form apparently based upon the disclosure of Uyama.

(c) Claims 12-20 are rejected under 35 U.S.C. 103(a) as being unpatentable over Caldwell et al., U.S. Patent No. 4,767,627, in combination with Takayanagi et al., U.S. Patent No. 4,765,983. This ground of rejection makes many assumptions regarding what is considered that each of Takayanagi and Caldwell disclose. The conclusion regarding obviousness asserts that it would have been obvious to a person of ordinary skill in the art to prepare a capsule containing a planar

disc or patch to be delivered to the digestive tract of an individual animal wherein the disc or patch can be formed by film-forming or laminating methods such as the film or patch of Takayanagi.

(d) Claim 21 is rejected under 35 U.S.C. 103(a) as being unpatentable over Caldwell et al., U.S. Patent No. 4,767,627, in combination with Takayanagi et al., U.S. Patent No. 4,765,983, in further combination with Uyama et al., U.S. Patent No. 6,086,869. In this ground rejection, it is contended that it would have been obvious to place an active agent, such as interferon, in a film composition that is administered in a capsule form, apparently based upon the disclosure of Uyama.

In contrast to the assertions in the rejections, Applicant respectfully submits that the documents utilized in the rejections of record, either prior to or subsequent to the present amendment, do not teach or suggest Applicant's disclosed and claimed invention. For the sake of brevity, Applicant will stress arguments for patentability over the documents utilized in the rejections based on the presently pending claims. However, Applicant's preserve the right to file one or more continuation applications directed any of the subject matter disclosed in the instant application, including subject matter pending prior to the present amendment, and to submit arguments for patentability of such subject matter.

Expanding upon the above, Applicant notes that Takayanagi is directed to a slow releasing adhesive medical tape for oral mucosa which is a film-form adhesive medicament, and the medicament-containing layer of which is at least water-soluble and is gradually dissolved to provide the medical effect. In particular, Takayanagi is directed to an adhesive medical tape for oral mucosa comprising a support layer composed of an intestine-soluble polymer and at least one

medicament-containing layer composed of a water-soluble polymer containing at least one kind of an antiphlogistic and analgesic medicament.

The medicament layer of Takayanagi may be composed of one layer but is disclosed to preferably be composed of two or more layers. In the case of two layers, the layer (layer II) adhering to a mucous membrane is composed of a fast dissolving layer and other layer (layer I) is composed of a slow dissolving layer to control the dissolution of the medicament layer or the concentration of the medicament in layer II is increased, whereby the adhesive medical tape having a quick acting property and a long lasting property is obtained.

Takayanagi further discloses that the support layer is composed of an intestine-soluble polymer to prevent the form of the adhesive medical tape from being collapsed or deformed and also prevent the face (front face) of the adhesive medical tape opposite the face sticking to a mucous membrane from sticking to other mucous membrane.

Still further, Takayanagi discloses at column 4, lines 32-33, that a cover film for protecting the medicament layer can be used, if necessary. However, Takayanagi does not appear to provide any further disclosure of such a cover film and any specific association with the disclosed medical tape. For example, Takayanagi does not teach or suggest that the adhesion site-controlling layer may attach to the protecting layer, as recited in Applicant's claim 1. Moreover, Takayanagi does not teach or suggest that the adhesion site-controlling layer is attached to the protecting layer, as recited in Applicant's claim 22. Still further, Takayanagi does not teach or suggest that the drug-carrying layer is sealed between the adhesion site-controlling layer and the protecting layer to prevent leaking of the drug, as recited in dependent claim 23. Thus, in Applicant's invention, the intermediate drug-carrying layer can be contained in a closed space surrounded by the adhesion

site-controlling layer and the protecting layer, and the drug-carrying layer (i.e., the drug) can be prevented from contacting with the outer environment. Owing to such construction, the oral formulation of the present invention can achieve advantageous effects such as good bioavailability. See, for example, page 7, line 13 to page 8, line 3 of the present specification. In contrast, the medical tape of Takayanagi is a simple tape formulation, is designed for use on oral mucosa and not the harsh environment associated with passing thought the stomach and going into the intestines, and the edge of the tape is not processed. Therefore, the medicament is contained in an opened (not closed) space and is contacted with an outer environment at edge portions of the tape.

Expanding upon the above, it is noted that Applicant's independent claim 1 is directed to an oral formulation for gastrointestinal drug delivery which comprises an adhesion site-controlling layer for attaching the formulation to a selected site in the intestines, a drug-carrying layer containing a drug and an adhesive to attach the drug containing layer to the selected site in the intestines when the adhesion site-controlling layer dissolves at the selected site in the intestines, and a protecting layer for protecting the drug in the drug-carrying layer, the drug-carrying layer existing between the protecting layer and the adhesion site-controlling layer, the adhesion site--controlling layer may attach to the protecting layer and the adhesion site-controlling layer is a film made of an enteric polymer. Thus, Applicant's invention includes a drug-carrying layer between the protecting layer and the adhesion site-controlling layer which enables the oral formulation to pass through the digestive tract to a selected site in the intestines.

In contrast to Applicant's invention, the adhesive medical tape for oral mucosa of Takayanagi does not include such as structure, and is, in fact, structured and arranged for oral mucosa. In this regard, the support layer of Takayanagi is composed of an intestine-soluble

polymer and the medicament-containing layer is composed of a water-soluble polymer. As disclosed in Takayanagi, at column 3, beginning at line 50, the support layer of Takayanagi composed of an intestine-soluble polymer functions to prevent the form of the adhesive medical tape from being collapsed or deformed and also prevents the front face of the adhesive medical tape opposite the face sticking to a mucous membrane from sticking to other mucous membrane. Also, if the support layer is not formed, the front face side which does not stick to the mucous membrane is also dissolved, whereby the medicament contained in the portion is lost in vain as well as the lasting property thereof is reduced.

Moreover, because Takayanagi is structured and arranged for the oral mucosa, the support layer prevents the useless dissolution of the medicament layer. In other words, because the film of Takayanagi is utilized for oral mucosa, it is designed to have an enteric polymer protect the medicament layer. Takayanagi does not teach or suggest any type of film that enables Applicant's attachment to a selected site in the intestines including the drug-carrying layer existing between the protecting layer and the adhesion site-controlling layer, and the adhesion site-controlling layer being a film made of an enteric polymer.

Still further, as discussed with the Examiner during the above-noted May 11, 2004 interview, Applicant's dependent claims further patentably define Applicant's invention. For example, Applicant's dependent claims 4 and 5 further define that the protecting layer is in hemispherical form forming an inner space and an opening part, and the drug-carrying layer exists in the inner space of the protecting layer in the hemispherical form, and wherein the adhesion site-controlling layer covers the opening part of the protecting layer in the hemispherical form. Moreover, dependent claim 5 further defines dimensions associated with the hemispherical

structure. There is no motivation in the prior to modify Takayanagi to include such structure. The rejection does not establish that such structure is known in the art, especially in the environment as recited by Applicant, with the desirability of achieving good bioavailability under harsh conditions, as discussed above.

Still further, Applicant's dependent claim 8 recites that the protecting layer is a film or a capsule made of a water-insoluble polymer or a wax. In this regard, the Examiner's attention is directed to Applicant's specification, at page 11, lines 6-22. Of these materials, ethylcellulose, aminoalkylmethacrylate copolymer (Eudragit RS) and cellulose acetate are not dissolved in the intestine (namely, not enteric). On the other hand, chitin and chitosan, or a wax such as stearic acid, stearyl alcohol, white beeswax, cacao butter, hard fat, purified shellac, polyoxyl 40 stearate, cetanol and polyoxyethyl lauryl ether are hard to be dissolved in the intestines. Takayanagi does not teach or suggest a protecting layer of water-insoluble polymer or a wax.

Regarding the rejections wherein Takayanagi is modified with Caldwell, the Examiner appeared to agree at the May 1, 2004 interview, that the disclosures of these documents are not combinable for the reasons set forth in Applicant's previous response. For example, the Examiner was reminded regarding the combination of Takayanagi and Caldwell that such a combination would be inappropriate in view of their diverse disclosures., In particular, one having ordinary skill in the art would not modify Caldwell in the manner asserted in the rejection.

Caldwell is directed to a gastric retention device comprising a planar disc-shaped or planar multi-lobed figure, with the device having the properties of:

(a) compressible to a size suitable for swallowing;

(b) expandable to a size which will prevent passage through the pylorus for a predetermined time;

(c) sufficiently resistant to forces by a stomach to prevent passage through a pylorus for a predetermined time; and

(d) erodible in the presence of gastric juices so that the device after a predetermined time is no longer able to retain or attain the expanded configuration described (b) and/or resist the forces as described in (c).

The improvement of bioavailability disclosed in Caldwell, such as disclosed at column 3, lines 3-11, is associated with the specific structure disclosed in Caldwell. Thus, there is no motivation to modify Caldwell in the manner asserted in the rejection. Moreover, the device of Takayanagi is specifically designed to be applied orally, and there is no motivation to apply its disclosure in a device disclosed by Caldwell. Thus, even though Takayanagi discloses the use of intestine-soluble polymers, such polymers are structured and arranged in the tape of Takayanagi for oral mucosa as discussed above. Takayanagi does not teach or suggest the structure recited in Applicant's claim 1. Therefore, even if for the sake of argument the disclosures of Takayanagi and Caldwell were combined, Applicant's disclosed and claimed invention would not be arrive at.

Uyama is added to the rejections of claims 10, 11 and 21 with the primary assertion that Uyama teaches that interferon can be orally administered in various forms, and that one of ordinary skill in the art would have been motivated to place as active agent such as interferon in a film composition and that it can be administered in a matrix or capsule form. However, the question to answer is not whether a drug is a conventional drug, but whether one having ordinary skill in the art would have been motivated to modify Takayanagi or Takayanagi combined with Caldwell to

include such a conventional drug. Hewlett-Packard Co. v. Bausch & Lomb Inc., 15 USPQ2d 1525 (CAFC 1990). In the instant situation, the rejection improperly does not address this issue.

There is absolutely no convincing line of reasoning present here that would lead one having ordinary skill in the art to incorporate the medical tape of Takayanagi in a capsule. Moreover, Takayanagi discloses medical tapes for oral mucosa including at least one kind of an antiphlogistic and analgesic medicament. The rejection must therefore establish motivation for placing the medical tape of Takayanagi in a capsule and for incorporating interferon as the medicament in the medical tape of Takayanagi. Certainly, the rejection has not provided such motivation when Takayanagi is designed for treatment of oral mucosa and not for delivery of medicaments such as interferon.

Additionally, each of the dependent claims is patentable over the prior art of record in view of the fact that each of these dependent claims includes the limitations of the claims from which they depend. Moreover, each of the dependent claims is patentable over the prior art of record because it would not have been obvious to one having ordinary skill in the art to incorporate such dependent claim features into the invention as more broadly recited in the claims from which they depend, such as for the reasons noted above.

Accordingly, the rejections of record should be withdrawn as improper, and all of the claims should be indicated as allowable.

CONCLUSION

In view of the foregoing, the Examiner is respectfully requested to reconsider and withdraw the rejection of record, and allow each of the pending claims.

Applicant therefore respectfully requests that an early indication of allowance of the application be indicated by the mailing of the Notices of Allowance and Allowability.

Should the Examiner have any questions regarding this application, the Examiner is invited to contact the undersigned at the below-listed telephone number.

Respectfully submitted,
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